Complete Summary

GUIDELINE TITLE

Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Diagnosis and management of attention deficit hyperactivity disorder in primary care for school-age children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007 Mar. 68 p. [135 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2005 Jan. 69 p.

**** REGULATORY ALERT ****

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- May 2, 2007, Antidepressant drugs: Update to the existing black box warning on the prescribing information on all antidepressant medications to include warnings about the increased risks of suicidal thinking and behavior in young adults ages 18 to 24 years old during the first one to two months of treatment.
- August 21, 2006, Dexedrine (dextroamphetamine sulfate): Changes to the BOXED WARNING, WARNINGS and PRECAUTIONS sections of the prescribing information.
- September 29, 2005, Strattera (atomoxetine): Manufacturer asked to revise the prescribing information to include a boxed warning and additional warning statements that alert health care providers of an increased risk of suicidal thinking in children and adolescents.
- August 2005, Adderall: Return to Canadian market after February 2005 marketing suspension.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Attention deficit hyperactivity disorder (ADHD)

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Pharmacists
Physician Assistants
Physicians
Psychologists/Non-physician Behavioral Health Clinicians
Public Health Departments
Social Workers

GUIDELINE OBJECTIVE(S)

- To increase the use of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) or Diagnostic and Statistical Manual for Primary Care

(DSM-PC) criteria and screening for other primary conditions and comorbidities for patients newly diagnosed with attention deficit hyperactivity disorder (ADHD)
- To improve the primary care use of first-line medications through a systematic, uniform approach
- To increase the number of clinicians who are utilizing a multimodality approach in treatment planning for children with attention deficit hyperactivity disorder (ADHD)
- To ensure that all patients diagnosed with ADHD are accurately evaluated and appropriately managed, whether by the primary clinician or through subspecialty consultation

TARGET POPULATION

Children and adolescents from kindergarten through 12th grade with suspected or diagnosed attention deficit hyperactivity disorder (ADHD) in the primary care setting

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation

1. Evaluation of key features of attention deficit hyperactivity disorder (ADHD) using Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Diagnostic and Statistical Manual for Primary Care (DSM-IV/DSM-PC) criteria
2. Assessment of and screening for other primary conditions and comorbidities
3. Coordination of care with subspecialties as indicated for those patients with ADHD and a comorbid condition

Management

1. Multimodal management of ADHD by the primary care physician
2. Education of key individuals (parents/family, child, and school personnel)
3. Non-pharmacological interventions including social skills training, cognitive-behavioral therapy, and study/organizational skills training
4. First-line medications including psychostimulants (methylphenidate, dex-methylphenidate, dextroamphetamine, and amphetamine salts) and a norepinephrine reuptake inhibitor atomoxetine
5. Second-line medications including tricyclic antidepressants (imipramine, desipramine), alpha adrenergic agonists (clonidine, guanfacine), and nontricyclic antidepressant (bupropion)
6. Maintenance and continuing care

MAJOR OUTCOMES CONSIDERED

- Prevalence of other primary conditions and comorbid conditions in children with attention deficit hyperactivity disorder (ADHD)
- Academic and cognitive performance
- Behavioral and symptom response to therapy
- Development of compensation skills

- Adverse effects of drug therapy

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A literature search of clinical trials, meta-analysis, and systematic reviews is performed.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or

because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Nonrandomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

New Guideline Development Process

A new guideline, order set, and protocol is developed by a 6- to 12-member work group that includes physicians, nurses, pharmacists, other healthcare professionals relevant to the topic, along with an Institute for Clinical Systems Improvement (ICSI) staff facilitator. Ordinarily, one of the physicians will be the leader. Most work group members are recruited from ICSI member organizations, but if there is expertise not represented by ICSI members, 1 or 2 members may be recruited from medical groups or hospitals outside of ICSI.

The work group will meet for seven to eight three-hour meetings to develop the guideline. A literature search and review is performed and the work group members, under the coordination of the ICSI staff facilitator, develop the algorithm and write the annotations and footnotes and literature citations.

Once the final draft copy of the guideline is developed, the guideline goes to the ICSI members for critical review.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Critical Review Process

Every newly developed guideline or a guideline with significant change is sent to ICSI members for Critical Review. The purpose of critical review is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the guideline. Critical review also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes necessary across systems in their organization to implement the guideline.

All member organizations are expected to respond to critical review guidelines. Critical review of guidelines is a criterion for continued membership within the Institute for Clinical Systems Improvement (ICSI).

After the critical review period, the guideline work group reconvenes to review the comments and make changes, as appropriate. The work group prepares a written response to all comments.

Approval

Each guideline, order set, and protocol is approved by the appropriate steering committee. There is one steering committee each for Respiratory, Cardiovascular, OB/GYN, and Preventive Services. The Committee for Evidence-based Practice approves guidelines, order sets, and protocols not associated with a particular category. The steering committees review and approve each guideline based on the following:

- Member comments have been addressed reasonably.
- There is consensus among all ICSI member organizations on the content of the document.
- Within the knowledge of the reviewer, the scientific recommendations within the document are current.

- Either a critical review has been carried out, or to the extent of the knowledge of the reviewer, the changes proposed are sufficiently familiar and sufficiently agreed upon by the users that a new round of critical review is not needed.

Once the guideline, order set, or protocol has been approved, it is posted on the ICSI Web site and released to members for use. Guidelines, order sets, and protocols are reviewed regularly and revised, if warranted.

Revision Process of Existing Guidelines

ICSI scientific documents are revised every 12 to 36 months as indicated by changes in clinical practice and literature. Every 6 months, ICSI checks with the work group to determine if there have been changes in the literature significant enough to cause the document to be revised earlier than scheduled.

Prior to the work group convening to revise the document, ICSI members are asked to review the document and submit comments. During revision, a literature search of clinical trials, meta-analysis, and systematic reviews is performed and reviewed by the work group. The work group will meet for 1-2 three-hour meetings to review the literature, respond to member organization comments, and revise the document as appropriate.

If there are changes or additions to the document that would be unfamiliar or unacceptable to member organizations, it is sent to members to review prior to going to the appropriate steering committee for approval.

Review and Comment Process

ICSI members are asked to review and submit comments for every guideline, order set, and protocol prior to the work group convening to revise the document.

The purpose of the Review and Comment process is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the order set and protocol. Review and Comment also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes needed across systems in their organization to implement the guideline.

All member organizations are encouraged to provide feedback on order sets and protocol, however responding to Review and Comment is not a criterion for continued membership within ICSI.

After the Review and Comment period, the work group reconvenes to review the comments and make changes as appropriate. The work group prepares a written response to all comments.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC) and the Institute for Clinical Systems Improvement (ICSI): For a description of what has changed since the previous version of this guidance, refer to "Summary of Changes Report -- March 2007."

The recommendations for the diagnosis and management of attention deficit hyperactivity disorder (ADHD) in primary care for children and adolescents are presented in the form of two algorithms accompanied by detailed annotations. The Evaluation Algorithm for Attention Deficit Hyperactivity Disorder has 12 components; the Management Algorithm for Attention Deficit Hyperactivity Disorder has an additional 14 components (for a total of 26 components). Clinical highlights and selected annotations (numbered to correspond with the algorithm) follow.

Class of evidence (A-D, M, R, X) and conclusion grade (I-III, Not Assignable) definitions are repeated at the end of the "Major Recommendations" field.

Clinical Highlights and Recommendations

- Evaluate children/adolescents suspected of having ADHD based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Diagnostic and Statistical Manual for Primary Care (DSM-IV/DSM-PC) diagnostic criteria using consistent and appropriate diagnostic tools. (*Annotation #4*)
- Screen all patients for other primary conditions or comorbidities and appropriately refer to subspecialty consultation for further evaluation. (*Annotation #5*)
- Coordinate a simultaneous multimodal management plan that involves parent, child, and school-focused interventions. (*Annotation #14*)
- Establish communication and intervention linkages with related systems (e.g. schools, mental health) (*Annotations #16, 17, 18*)
- Establish appropriate use of medications in both initial and ongoing management of patients with ADHD. (*Annotation #20*)
- Provide consistent and comprehensive monitoring and care coordination for all patients with ADHD including pharmacologic and non-pharmacologic interventions, identification and management of emerging comorbidities, and the impact of ADHD condition on patients, their families, and schools. (*Annotation #24*)

Evaluation Algorithm Annotations

1. **Learning/Behavior Problems (Suspect ADHD)**

   Key Points:

   - Children may be referred for evaluation of learning problems, behavior problems, or specifically ADHD.
   - The intensity and prominence of individual ADHD symptoms vary in relation to a child's age, developmental stage, and academic level.

   Children may be referred for an ADHD evaluation by a variety of individuals for a variety of reasons. ADHD can present in many fashions either at home

or in the school setting. Furthermore, presenting symptoms may vary depending on the age of the child, evolve predictably with development, and change relative to academic demands at different grade levels. Although the core symptoms of inattention, impulsivity and hyperactivity are characteristic, their severity and pattern are highly variable across individuals.

Evidence supporting these recommendations is of classes: B, C, R

4. **Evaluate for Key Features of ADHD Using DSM-IV/DSM-PC Criteria**

Key Points:

- Evaluation of primary symptoms should include information from multiple sources such as parents/caregivers, the child, and school personnel.
- Three subtypes of ADHD are described based on the predominance of presenting symptoms: Predominantly Inattentive Type, Predominantly Hyperactive Impulsive Type, Combined Type.
- Criteria related to age of onset, duration, pervasiveness of symptoms, and impairment should be considered in establishing the diagnosis of ADHD.

The evaluation of primary symptoms should include information from multiple sources such as parents, the child, and school personnel. A comprehensive interview with parents or caregivers including current symptoms and their previous history, past medical and developmental history, school and educational history, family and psychosocial history is most important. There is no single evaluation tool available to make a definitive diagnosis of ADHD. The diagnosis is based on a clinical picture of early onset, significant duration and pervasiveness, and causing functional impairment within the life of the child or adolescent. This can be facilitated through the use of a semistructured interview or questionnaire with behavior rating scales completed by the parents, other caregivers, and school personnel.

The American Academy of Pediatrics (AAP) has developed a tool kit to assist clinicians in providing quality care for children with ADHD. This resource provides a basis for a coordinated multidisciplinary system of care including primary care professionals, school personnel, parents, and children. Ordering information may be obtained by accessing their web site: www.aap.org/bookstore or calling 1-888-227-1770. In addition, the NICHQ/Vanderbilt Assessment Scale is available as a non-normative referenced screening questionnaire.

The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*), is recognized as the most widely used resource for diagnosis of mental disorders, including ADHD. Alternatively, a manual designed for use in primary care practice, the *Diagnostic and Statistical Manual for Primary Care* (*DSM-PC*): *Child and Adolescent Version*, is now available. The DSM-PC is designed to bridge the gap between pediatric primary care and mental health services. It contains the DSM-IV criteria for childhood mental health disorders including ADHD and related conditions, but also contains useful information

on the developmental continuum of behavior, from normal variations to mental disorders.

Note: The DSM-IV TR (2000) is an updated version with no changes to ADHD criteria.

Other components of the evaluation are described at subsequent points within the original guideline document.

Symptoms

ADHD is categorized by the following core symptoms:

- Inattention
- Hyperactivity
- Impulsivity

Refer to DSM-IV/DSM-PC criteria in the original guideline document for specific behavioral symptoms.

There are 3 subtypes of the disorder based upon the "often" occurrence of at least six of nine behaviors within the inattention dimension, and six of nine behaviors within the combined hyperactivity/impulsivity dimension:

- Predominantly inattentive type (meeting criteria for the inattention dimension)
- Predominantly hyperactive/impulsive type (meeting criteria for the hyperactive/impulsive dimension)
- Combined type (meeting criteria for both dimensions)

Onset

Some behavioral symptoms typically have begun prior to the age of seven years in most children (see DSM-IV/DSM-PC criteria in the original guideline document). These symptoms may not be obvious in children who are predominantly inattentive without significant hyperactivity or impulsivity. Previous history must be reviewed carefully, especially in older children and adolescents, for the presence of symptoms not previously recognized or identified.

Duration

The presence of behavioral symptoms is typically of long duration (at least six months - see DSM-IV/DSM-PC criteria in the original guideline document) and previously recognized by parents, teachers, or the patient. Careful review of previous symptoms is critical for evaluation of the presence or absence of symptoms not otherwise identified by parents, school personnel, or other caregivers. It is also helpful to assess the characteristics of previous observers with respect to the validity of information (e.g., specific teacher qualities, home and class room environment).

Pervasiveness

Due to the relationship of ADHD symptoms to the external environment, specific interest and motivation, individual demands on attention and focus, and day-to-day influences, there can be significant variability within a given child. Nevertheless, ADHD behaviors are typically present in more than one setting (e.g., home, school, play, or work – see the DSM-IV/DSM-PC criteria).

Impairment

ADHD symptoms present in varying degrees of severity and impairment, depending upon individual characteristics and demands. It is important to assess the degree of impairment as the ADHD symptoms relate to the child's or adolescent's social, academic, or family functioning (see DSM-IV/DSM-PC criteria in the original guideline document).

A word about behavior rating scales:

> At least one standardized rating scale (see the original guideline document) is recommended for reviewing observations from those persons in direct contact with the child/adolescent (parents, day care providers, teachers, etc.) These observations/ratings should be used as part of the overall historical data base and should not be the sole criteria used to include or exclude the diagnosis of ADHD. Caution should be used in interpreting these due to observer bias, threshold of problem identification, and lack of observer knowledge (especially true of older children/adolescents in middle or upper grades). **The ADHD Rating Scale IV is normed based on DSM-IV/DSM-PC criteria and available for current use**. (Refer to the list of knowledge products in the Support for Implementation section of the original guideline document).

A word about continuous performance tasks:

> Various continuous performance tasks (CPTs) have been developed to attempt to objectively measure sustained and selective attention: for example, Test of Variables of Attention (TOVA), Gordon Diagnostic System, Conners CPT, etc. These tasks involve the rapid presentation of stimuli where subjects are asked to respond to specific targets. The results measure certain variables of attention related to errors of omission and commission. Although these instruments appear to discriminate between children with ADHD and their normal counterparts at a group level, the usefulness of these measures in assessing individual children is limited. Due to significant false negative rates (estimated at 15-30%), these instruments are not considered pathognomonic of ADHD and are of limited utility in screening and evaluation. They are most useful in research settings and the complex individual patient where more extensive data may be useful.

Evidence supporting this recommendation is of classes: C, R

5. **Screen for Other Primary Conditions and Assess for Comorbidities**

Key Points:

- Many children can exhibit symptoms of ADHD at some point in their development, but it is important to note that common symptoms (inattention, hyperactivity, disruptive behavior, academic difficulty) can be caused by a number of other difficulties.
- One in every three to four children with ADHD has a learning disability.
- Screen regarding academic functioning and refer for a formal psychoeducational assessment if warranted.
- Assess ADHD symptoms in the context of a child's academic performance in order to determine if symptoms are related to learning abilities (i.e., learning problems, low IQ, high IQ), ADHD, or some combination.

Many children can exhibit symptoms of ADHD at some point in their development, but it is important to note that common symptoms (inattention, hyperactivity, disruptive behavior, academic difficulty), can be caused by a number of other difficulties. At this stage of the process, the clinician must consider diagnoses other than ADHD in one of two paradigms. Some patients will meet the criteria for ADHD but will also have a **comorbid diagnosis or diagnoses ("primary ADHD" with comorbidity)**. Other patients will have a diagnosis other than ADHD that largely accounts for the behavioral symptoms of inattention, impulsivity, and/or hyperactivity. The latter instance can be conceptualized with an **alternative diagnosis as "primary" with secondary features that mimic ADHD**.

Because of extensive comorbidity, the evaluation of children referred for problems with attention, impulse control or hyperactivity should include biobehavioral, developmental, psychological, psychosocial, educational and speech/language components.

If issues comorbid to ADHD are not identified and addressed they may complicate and worsen the child's level of functional impairment and lead to higher morbidity with a poorer prognosis. Research suggests that ADHD subgroups might be delineated based on patterns of comorbidity. These distinct subgroups may have different clinical courses, pharmacologic responses and risk factors. Proper identification of comorbid conditions can lead to appropriate refinements in treatment planning.

One way to get at comorbidity is by using standardized screening instruments such as the Child Behavior Checklist. It is important to note that this instrument serves a screening function and is not meant to be diagnostic for any specific condition. Training is recommended to effectively and appropriately score and interpret these instruments. Other, more specific, instruments including the Children's Depression Inventory, the Revised Children's Manifest Anxiety Scale and the Academic Performance Rating Scale may best be utilized in consultation with a qualified mental health professional.

Differentiating ADHD from an alternative primary condition such as oppositional-defiant disorder, generalized anxiety disorder, or a specific learning disability can be difficult even for seasoned clinicians. Therefore the diagnosis of ADHD should be applied with care and caution, only after an appropriately thorough evaluation.

In screening children and adolescents for other diagnoses, it is important to emphasize the need to include information from as many sources as possible: the patient, parents, teachers, coaches, and health care professionals.

Screening patients for other diagnoses falls into the five basic domains defined in A-E of this annotation.

There are a number of possible strategies to consider in the comprehensive screening of the ADHD patient for other problems. One is for the primary care provider to utilize his or her ongoing familiarity and relationship with the family and patient over time to get a sense of any primary or comorbid problems identifiable in the five areas defined in A-E of this annotation.

A second strategy would be to use a semi-structured interview format with some "key" questions designed to get at the disorders identified in the five previously described domains.

Another strategy includes the use of "screening" questionnaires which, although not diagnostic, can offer a general sense of potential areas for concern. Examples of utilized instruments are the **Achenbach Child Behavior Checklist (CBCL), Teacher Report Form (TRF), Youth Self-Report, Devereux Scales of Mental Disorders (DSMD), and the Behavioral Assessment System for Children (BASC)**. These forms are scored across a number of behavioral domains. Clients who receive scores above a certain cutoff point in any given domain might then be considered for more intensive evaluation around that problem area. Using the instrument properly requires some training. Consultation with a psychologist for assistance in interpretation may be helpful. For additional information, refer to Annotation #5 in the original guideline document.

For those patients suspected of other conditions or comorbidities, continued assessment is necessary to confirm or exclude such conditions. In these cases further investigation, including subspecialty consultation, may be needed.

Evidence supporting this recommendation is of classes: C, R

A. **Biomedical Conditions**

Key Points:

- A health history and a physical/neurological/developmental assessment are necessary to identify or rule out problems in the biomedical realm of the ADHD differential diagnosis.

- Based on the history and physical examination, further work-up may be indicated in areas such as genetic or chromosomal, neurological, or biomedical conditions.

Note: the screening for the 5 domains (Annotations #5A-E) will provide data to suspect a differential diagnosis or data to suspect a diagnosis of ADHD.

A health history and a physical/neurological/developmental assessment are necessary to identify or rule out problems in the biomedical realm of the ADHD differential diagnosis. Deficits in sensory areas (i.e., hearing and vision) may result in classroom difficulties and produce restless or inattentive behaviors. Children with neuromaturational delays, or neurological "soft signs" are at risk for learning and behavioral disorders.

Evidence supporting this recommendation is of class: R

General Health History and Physical Examination, including:

- Growth parameters: height, weight
- Vital signs: blood pressure, pulse
- Screening of vision and hearing

Special emphasis on:

- Overall physical appearance
    - Minor physical anomalies may signal genetic abnormalities (low-set ears, large or undescended testicles, high-arched palate, etc.)
- Signs and symptoms of abuse
- Neurological examination
    - Abnormalities (e.g., motor or vocal tics, asymmetry or abnormality of reflexes or motor tone, tremors)
    - "Soft signs"

      Subtle neurological signs including difficulty with sequencing, dysrhythmia, mirroring, motor overflow, and clumsiness. "Clumsiness" refers to the performance of fine and/or gross motor tasks in an immature, slow, irregular, or inconsistent fashion. Skills are imprecise rather than grossly impaired. "Soft" neurological signs are present in many children with learning and behavioral disorders.

- Assessment of developmental status
    - Observation of child's activity level in examination room, ability to converse appropriately, ability to follow directions, and cooperativeness
- History of delays or questionable areas:
    - Auditory perception

- Expressive language
- Visual and sequential processing
- Memory
- Fine and gross motor function

- Cognitive screening tools

  The provider may find the following helpful. Responses are age dependent.

  - Ask the child to tell about a recent event – birthday, sports event, etc. (Note whether language is fluent, coherent, and organized.)
  - Ask parent if child has difficulty taking telephone messages or retaining classroom instructions, if age appropriate. (short-term memory)
  - Observe the child using a pencil to copy symbols and words. (visual perceptual-motor)
  - Ask the child to perform a three-step command. (sequencing)
  - Ask the child to repeat four words, remember them, and repeat them again when asked in 5 minutes or 10 minutes. (memory, attention)
  - Ask the child to repeat three, then four digits forward; then repeat three, then four digits backward. (concentration)

Based on the history and physical examination, further work-up may be indicated. Refer to the original guideline document for information.

Evidence supporting this recommendation is of classes: C, D

B. **Emotional/Psychiatric Problems**

Key Points:

- Children with ADHD have increased risk for depression, anxiety disorders, conduct disorder, and substance abuse.
- Clinicians should screen for these comorbid conditions during the interview with all ADHD patients.
- Children with autism spectrum disorders may present with ADHD symptom features but the autism spectrum symptoms will be primary.

The diagnosis of ADHD may be complicated by either the presence of another coexisting psychiatric condition or the existence of a psychiatric condition that has symptoms suggestive of the diagnosis of attention deficit hyperactivity disorder. It is clear that children with attention deficit hyperactivity disorder are at risk for the coexistence of depression, anxiety disorders, conduct disorders, and substance abuse. The prevalence of these conditions in children with ADHD ranges from 15 to 30 percent. At the same time it is those same four diagnostic entities that may most often be misdiagnosed as ADHD due

to the commonality of many of the symptoms. Therefore, it behooves the clinician to screen for those four conditions when evaluating a child for whom the diagnosis of ADHD is being considered. If the clinician identifies sufficient positive symptomology after completion of these screening questions to raise the clinical suspicion of a psychiatric diagnosis, then referral to a mental health professional is indicated.

Evidence supporting this recommendation is of classes: C, R

The following may be considered as a starting point in evaluating the possible presence of depression, anxiety disorders, conduct disorders, and substance abuse.

Depression

- Consistent depressed or irritable mood for nearly every day which has lasted for at least two weeks
- Significantly diminished interest or pleasure in all or almost all activities
- Undeniable decline in school or work performance
- Recurrent suicidal ideation without a specific plan or recurrent thoughts of death
- Persistent depressed mood associated with almost daily insomnia or hypersomnia

Childhood Mania-Juvenile Bipolar Disorder

Recent experience suggests an overlap between ADHD and juvenile mania-bipolar disorder. The following are characteristics of childhood mania that may aid the clinician in differentiating the 2 conditions:

- Mania-bipolar disorder is extremely rare when compared to ADHD.
- Patient experiences pressured speech, racing thoughts, grandiosity, reduced need for sleep.
- Symptoms include rapid onset affective storms, prolonged severe temper outbursts, violent furious aggression, irritability, erratic interpersonal behavior.
- Usually mixed presentation with depression.

Anxiety Disorder

The diagnosis of post traumatic stress disorder, which falls under the anxiety spectrum, may be the most common diagnosis that mimics ADHD. The most likely areas of post traumatic stress disorder are those that fall in the spectrum of physical or sexual abuse. Those areas should have been screened by taking a psychosocial history as part of the overall assessment. The remaining diagnoses that are likely to present themselves in childhood include those of separation anxiety disorder and generalized anxiety disorder. Screening which may be useful in identifying those conditions is listed below:

- Developmentally inappropriate and excessive anxiety concerning separation from home or from those to whom the child is attached
- Persistent and excessive worry about losing or about possible harm befalling major attachment figures
- Repeated complaints of physical symptoms when separation from major attachment figures occurs or is anticipated
- Consistent excessive dissatisfaction with less than perfect performances (e.g., school assignments)
- The child finds it difficult to control or stop his or her worrying/anxiety.

Conduct Disorder

- Presence of negativistic, hostile, and defiant behaviors which may include losing temper, arguing with adults, refusing to comply with adults' requests, deliberately annoying people, consistent anger and resentment expressed toward others
- Presence of a history of physical aggression toward people or animals
- History of deliberate involvement in theft from others
- History of violation of rules with potential serious consequences (e.g., running away from home, truancy from school)

Substance Abuse

- History of use of alcohol or illicit drugs of any kind
- Use of alcohol or drugs to alter mood state or to escape a mood state
- Consequences at school, in the home, or with legal authorities related to the patient's use of alcohol or drugs
- History of a peer expressing concern regarding the patient's use of alcohol or drugs
- History of feeling guilty about use of alcohol or drugs
- Behaviors suggestive of drug or alcohol use (increasing isolation from family/friends, presence of drug paraphernalia)

Pervasive Developmental Disorders (e.g., autistic disorder, Asperger's syndrome)

Although it is uncommon for ADHD to be confused with autism spectrum disorders, it is not uncommon for children with autism spectrum disorders to present with ADHD features. Typical problem areas for these children include:

- Qualitative impairment in social interaction (e.g., reciprocity, non-verbal gesture, sharing, peer relationships)
- Qualitative impairment in communication (e.g., language delay, conversational speech, idiosyncratic/stereotyped language, symbolic/imitative play)
- Restrictive, repetitive patterns of behavior (e.g., preoccupations, rituals, self-stimulatory motor mannerisms).

C. **Family/Psychosocial Problems**

Key Points:

- Chronic or acute stress may cause changes in a child's academic or behavioral functioning, such as mimicking ADHD symptoms or exacerbating existing symptoms.
- Assess family history of mental illness. Subtypes of ADHD vary with type of mental illness in families.
- Assess the family's functioning in terms of the nature of the caregiver-child interactions, impact of symptoms within the home, and family resources for coping.

In addition to the evaluation of comorbid psychiatric or learning conditions, it is important to consider the psychosocial context in which the child's symptoms and concerns arise. Identified below are factors to consider and some ideas for interview questions. A thorough assessment of the family's functioning will assist in understanding both the nature and severity of the child's symptoms and the family's ability to make use of education and treatment recommendations. If significant family pathology is present, then referral to a mental health professional, family therapist, or social services is appropriate.

Psychosocial Stressors

The experience of chronic or acute stress may manifest in a child's functioning in a variety of ways; common symptoms include anxiety, dysphoria, and behavioral acting out. Any of these difficulties may result in changes in academic performance or behavior in the home environment.

Sample question: Has your family been coping with other difficulties or stressors during the past year or two?

Stressful life events may include:

- Major life transitions or changes (move, change of school)
- Loss (death of loved one, parental separation or divorce)
- Abuse (sexual or physical, domestic violence)
- Traumatic events (e.g., car accident)

Family History

There is increasing recognition that the subtypes of ADHD vary not only in patterns of comorbidity, but also with respect to genetic family history. Family history data suggests more ADHD, aggression, and substance abuse in families of children with ADHD-Hyperactive Impulsive subtype, whereas families of children with ADHD-Inattention subtype have more anxiety disorders and learning problems.

Sample question: Has anyone in your family (parents, siblings, and extended family) been treated for...?

- Anxiety disorder
- Depressive disorders (including bipolar disorder)
- Learning/attention problems
- Developmental delay, mental retardation, autism
- Chemical dependency
- Conduct problems
- Other mental health problems

Quality of Caregiving

Consider the family's strengths and resources for coping as well as their beliefs and attributions concerning their child's difficulties. Also examine the effects of the child's symptoms on the family as a whole.

Interview caregivers for evidence of family dysfunction or vulnerability. In particular, evaluate for problems which may affect the parents' ability to manage behavior consistently and appropriately, to provide adequate nurturance and structure, and to accurately (meaningfully) evaluate the child's functioning.

These problems may include:

- Parental psychiatric disorder or chemical abuse/dependency
- Cultural differences
- Lack of education or information
- Low intellectual functioning
- The absence of family/community supports
- Psychosocial stressors (see above)
- Limited nurturance of child

Sample questions:

- What is a typical day like at your home?
- Do you feel supported by the child's school and the community?
- Who provides help with your child when you need it?
- Is there any use of alcohol or illicit drugs in your home?
- Tell me what you've heard or learned about ADHD?
- What kind of discipline works (or doesn't work) with your child?
- When do you enjoy being with your child?

Evidence supporting this recommendation is of classes: C, R

D. **Speech/Language Problems**

Key Points:

- If screening indicates concerns about a child's speech and/or language, including expressive and receptive language, speech

fluency, pragmatic language, prosody, or phonology/articulation, a referral should be made to a pediatric speech and language pathologist.
- Parents may make a request for speech screening in writing to their child's school with a copy of the request kept by the parents. Alternatively, the family may seek a private speech and language evaluation. It is helpful for primary care providers to be familiar with speech and language pathology resources in their community in order to make appropriate referrals.
- If speech and language problems suggestive of a pervasive developmental disorder are present, referral should be made to developmental or mental health professionals with a speech and language pathologist as a part of the diagnostic team.
- Children with ADHD are at higher risk for "vocal chord abuse." When a child is found to have a chronic raspy or hoarse vocal quality, a referral to an otolaryngologist is recommended to look for vocal cord pathology such as vocal cord thickening or vocal cord nodules.
- The presence of repetitive noises, throat clearing, sniffing, barking or coprolalia in a child with ADHD suggests comorbid Tourette's syndrome. A consultation by a pediatric neurologist, developmental and behavioral pediatrician, or child psychiatrist may be appropriate.

Up to 50% of children with ADHD may show evidence of an expressive language problem. Deficits in verbal functioning may be chronic and are particularly common in adolescents with antisocial behavior. Any history of speech or language delay or services should be discussed and reviewed. Common difficulties include:

- Historical or current problems with dysfluencies
- Disorganized speech on tasks that require verbal explanations
- Excessive, tangential, or rapid speech
- Problems with volume modulation
- Fragmented sentences with pauses

Receptive language problems may also be present in children with ADHD or may be a comorbid condition. These children may mimic primary problems with attention and have problems following directions and retaining verbally presented material.

Many children with ADHD manifest "pragmatic language dysfunction" in social situations - namely, an inability to read essential verbal, nonverbal, and situational cues. This can lead to a tendency to make socially unacceptable choices. Over 50% of children with ADHD are likely to have communication/interaction problems that manifest themselves as social skills deficits. The clinician should inquire about evidence of aggressive, domineering, and intrusive social interaction styles as well as difficulty in initiating and maintaining friendships, or even outright rejection by peers.

If screening indicates concerns about a child's speech and/or language including expressive and receptive language, speech fluency, pragmatic language, prosody, or phonology/articulation, a referral should be made to a pediatric speech and language pathologist. Parents may make a request in writing to their child's school with a copy of the request kept by the parents. Alternatively, the family may seek a private speech and language evaluation. It is helpful for primary care providers to be familiar with speech and language pathology resources in their community in order to make appropriate referrals.

Children with hearing impairments can also have ADHD exclusive of their hearing problems. This can be a complicated differential diagnosis, possibly requiring specialty referral. Children with hearing impairment may also present with symptoms of inattention, problems with task completion, disruptive behavior, noncompliance, speech and language problems, or a need for frequent repetition of information. All children being evaluated for ADHD should have had their hearing screened within the previous 12 months. If questions arise, they should be referred to an audiologist for formal evaluation.

Children with difficulties in the pervasive developmental disorder/autism spectrum can sometimes present with symptoms similar to ADHD. Identifying features of PDD/autism from the speech/language standpoint include:

- Excessive self-talk
- Unusual intonation patterns or monotone
- Echolalia
- Acts as if didn't hear
- Socially inappropriate behaviors (e.g., screaming, interrupting)
- Loss of previously acquired language skills

If speech and language problems suggestive of a pervasive developmental disorder are present, referral should be made to developmental or mental health professionals with a speech and language pathologist as a part of the diagnostic team.

Children with ADHD are also at higher risk for "vocal cord abuse" and therefore voice quality (particularly "hoarseness") should be assessed. Children with evidence of vocal cord abuse (e.g., hoarseness of > 6 months duration) may need referral to an otolaryngologist to evaluate for vocal cord pathology such as vocal cord thickening or vocal cord nodules.

Patients with ADHD who have comorbid vocal tics or Tourette's may demonstrate speech patterns typical to this disorder including repetitive noises, throat clearing, barking or even coprolalia. A consultation by a pediatric neurologist, developmental and behavioral pediatrician, or child psychiatrist may be appropriate.

Evidence supporting this recommendation is of classes: D, R

E. **Academic/Learning Problems**

Key Points:

- Approximately 25-30% of children with ADHD also have a specific academic skill deficit or "learning disorder" in achievement areas such as reading, written language, or mathematics.
- Children with subnormal intelligence may appear inattentive due to a lack of understanding or comprehension of material; furthermore, these children are more likely than children of normal intelligence to have comorbid ADHD.
- If history and screening indicate significant concerns with academic functioning, the child should undergo individual cognitive/psychoeducational assessment.

Children with ADHD are at increased risk of struggling academically and are frequently reported as underachieving. The history should include information from parents and teachers to assess common performance areas of difficulty in children with ADHD, which include:

- Completion of independent work in a timely fashion
- Attention to detail
- Studying for exams
- Taking notes on classroom lectures
- Organizational skills
- Time management
- Self-monitoring

Empirical evidence indicates a consistent relationship between ADHD and learning disorders. One in every three to four children with ADHD has a specific academic skill deficit or "learning disability" in a traditionally defined area such as reading, written language, or mathematics. A learning disability is formally identified by comparing a student's IQ score to his or her scores in achievement areas and identifying a significant discrepancy (usually defined as 1.75 to 2 standard deviations) between the two.

Learning disabilities or disorders as currently defined in the DSM-IV/DSM-PC include:

- Reading disorder
- Mathematics disorder
- Disorder of written expression
- Developmental coordination disorder

Children with subnormal intelligence may appear inattentive, due to their lack of understanding of and tracking with material that is too difficult for them. However, it is also important to note that children with cognitive impairment are three to four times more likely to have ADHD than children with intelligence scores in the normal range. Therefore, an IQ assessment and individual achievement testing may

often be essential components of an ADHD evaluation. It is important to note that these children may be misdiagnosed as having a primary attention problem when in fact their symptoms are secondary to an inappropriate level of difficulty or stimulation in academic programming.

It is important to review school concerns with the patient, parents, teachers, and other school professionals. "Red-flags" or common presenting symptoms of concern for children with learning disabilities or cognitive impairment could include:

- Apparent apathy or hostility toward school
- Avoidance of or failure in specific subject areas
- Disruptive or negative behaviors in certain classes
- Historical evidence of difficulty in specific skill areas
- History of special educational services, "Title 1" assistance, etc.
- History of early childhood service

A sample of possible questions directed at children and their parents for assessing academic performance issues presenting in the context of an ADHD evaluation might include:

- What subject is your favorite/easiest?
- What subject is hardest/least favorite?
- How do you get along with your teachers?
- How much homework do you do on an average night? How does this compare to the amount of homework classmates are doing? How much do your parents help you with your homework?
- What grades are you receiving in each of your classes? How does this compare to your grades in previous years? Have you ever failed or are you currently failing any classes?
- Do you receive any special help in school?
- What are your interests outside of school?
- Does your son/daughter have any trouble with study/organizational skills?
- What do you see as your son/daughter's learning style strengths? Weaknesses?
- Do you think your child feels positively about school?
- Has anyone from school ever contacted you with specific academic or behavioral concerns about your child?
- Are you pleased with your child's grades?
- Do you feel your son/daughter is working up to his/her potential?

Students functioning at the "gifted" end of the cognitive spectrum may also manifest signs or symptoms of ADHD such as inattention, disruptive behavior, and apparent lack of motivation or engagement in classroom activities. It is important to note that these children can be misdiagnosed as having a primary attentional problem when in fact their symptoms are secondary to the lack of an appropriate level of

challenge and stimulation in academic programming. Giftedness and ADHD may coexist, however.

One of the goals of assessment is to determine whether a student's academic difficulties are due to ADHD, learning disabilities, or both. A second question would be whether a student presenting with symptoms of ADHD actually has ADHD as the primary condition or whether a learning style issue (e.g., learning disability) might be sufficient to account for the identified problem behaviors. There is a significant overlap between populations of students with ADHD and those with academic skills deficits.

On average, students with ADHD do not differ substantially from the rest of the school age population in terms of overall intellectual functioning. Many of these children, however, show academic ***performance*** problems despite adequate ***abilities*** as measured by standardized tests. These children often exhibit less on-task behavior as compared to peers and have less opportunity to respond to and track with academic instruction. Growing evidence also suggests that the behavioral symptoms of ADHD disrupt academic skill acquisition and performance.

One easy-to-use instrument for clinicians to screen academic functioning in students' grades one through six is the Academic Performance Rating Scale. This instrument consists of 19 teacher-completed items which are scored to yield four subscale scores: Learning Ability, Academic Performance, Impulse Control and Social Withdrawal. A total score of 1.5 standard deviations below the mean for age and gender are considered significant for screening purposes and warrant consideration of referral for formal educational assessment.

If a child is referred to formal psychoeducational assessment, it is important to differentiate the need for IQ testing, achievement testing or both. IQ testing gives a general estimate of personal problem-solving ability based on age norms. It is important to note that verbal and performance (or nonverbal) abilities may differ, and that children with language-based disorders might be penalized for this on a standard IQ test such as the WISC-IV, resulting in an underestimation of their true ability. A less language-based instrument such as the Kaufman (K-ABC-II) may be preferable.

Achievement testing, on the other hand, looks at a child's actual skill level in specific academic areas such as reading, spelling, or math as compared to either age norms or grade norms. Differences between predicted ability (based on IQ) and actual performance in specific academic skill areas (as defined by individual achievement test scores) are examined to identify learning disabilities, general underachievement, or giftedness.

If screening indicates concerns about academic and/or cognitive functioning and appropriate testing has not been done, the patient

should be referred for individual evaluation. Parents and primary care providers should communicate first with the classroom teacher and share concerns. Teachers often have similar concerns and welcome the opportunity to discuss these with the child's parents and physician. Testing and needs assessment are the responsibility of the special educational staff and/or school psychologist for each district. Parents may make a request for evaluation at any time. All requests for evaluations should be made in writing and dated with a copy of the request kept by the parent. Licensed child psychologists are also capable of providing this type of educational testing and cognitive assessment.

Evidence supporting this recommendation is of class: R

6. **Does ADHD Appear to Be the Primary Diagnosis?**

Suspected Alternative Primary Condition

If an alternative primary diagnosis is suspected through completion of an appropriate evaluation and an alternative primary diagnosis is identified that accounts for the presenting symptoms, the patient would be "out of guideline" and would be managed or referred as appropriate to the condition. Possible examples might include anxiety disorders, depression and cognitive impairment.

Patients undergoing further assessment for biomedical, emotional/psychiatric, family/psychosocial, speech/language and academic/learning problems may be identified as having a primary diagnosis other than ADHD that accounts for their symptoms. For these patients, symptoms are not due to ADHD; therefore, these patients do not fall within the scope of this guideline. The primary clinician is encouraged to coordinate care with multidisciplinary subspecialty consultation as indicated.

Suspected ADHD with Comorbid Condition

If ADHD is the likely primary diagnosis but a comorbid condition is also suspected, the clinician may choose to proceed to step 10 while concurrent evaluation of the suspected comorbid problem is completed. This would allow the clinician to continue to move into appropriate management strategies in a time-efficient manner. It is important to consider some degree of caution here in that comorbid issues can be of equal importance to the diagnosis of ADHD. Therefore they must be fully evaluated and the overlapping nature of the conditions (e.g., ADHD and learning disabilities) must be considered prior to moving fully into the management plan. Possible examples might include oppositional defiant disorder, learning disability.

8. **Any Additional Related Comorbidities Identified?**

Patients undergoing further assessment for biomedical, emotional/psychiatric, family/psychosocial, speech/language, and academic/learning problems may be identified as having a related comorbidity to the primary ADHD condition.

9. **Desire Subspecialty Consultation for ADHD Management?**

   For those patients with ADHD and a comorbid condition identified, the primary clinician is faced with the option of medically managing the ADHD component or utilizing medical subspecialty consultation. This decision depends on the complexity of the comorbid condition and its relationship to the ADHD symptoms, as well as on the individual clinician's own threshold of expertise and knowledge.

   The type of medical subspecialty consultation may include the following:

   - Child-Adolescent Psychiatry
   - Developmental-Behavioral Pediatrics
   - Pediatric Neurology

   The primary care clinician is encouraged to coordinate care between medical and non-medical (e.g., mental health, school/educational, speech/language) subspecialty consultation as indicated.

10. **DSM-IV/DSM-PC Criteria Confirmed?**

    Only after careful evaluation of the patient's primary symptoms and complete screening for any comorbidity or other primary condition is the clinician able to confirm the diagnosis of ADHD.

12. **ADHD Diagnostic Formulation**

    A comprehensive diagnostic formulation for a child with ADHD is critical so that parents clearly understand their child's attentional difficulties as part of an inclusive picture of his or her functioning. Findings should be presented to families within a biopsychosocial framework. Discussion of the ADHD diagnosis should be presented within the context of associated comorbid mental health diagnoses and issues, academic performance issues, learning disabilities, developmental concerns, medical diagnoses, social concerns, family issues, and stressors. It is crucial to discuss the child's and the family's strengths as well as their vulnerabilities.

    Adequate and appropriate treatment planning should then follow from a comprehensive and accurate diagnostic formulation.

Management Algorithm Annotations

14. **Multimodal Management Coordinated by Primary Clinician**

    Key Points:

    - Refer and coordinate interventions (medication, education, behavior management, skills training) to address core symptoms of ADHD and problems that develop secondarily to ADHD symptoms.

After accurate diagnosis of attention deficit hyperactivity disorder, the underlying principle of successful management includes multiple treatment modalities to address the multidimensional nature and secondary effects of the disorder and its impact on child's functioning. The primary clinician is in a unique position to coordinate these interventions from initial diagnosis through ongoing monitoring and continuing care. Subspecialty consultation at any point along this continuum may occur depending on the knowledge and expertise of the primary clinician as well as the complexity of the patient. Despite the need for individualized approaches, there are several general interventions and strategies which effectively address many of the common primary features of ADHD.

The multimodal treatment model for ADHD allows for simultaneous interventions resulting in effective management for the range of problems children with ADHD experience. A management plan might include proven treatments such as parent-child education, medication, behavior management training, cognitive training, social skill training, and academic support.

For core symptoms of ADHD, use of medication management alone is superior to behavioral treatment and to combined intervention of routine community care and medication. *[Conclusion Grade I: See Conclusion Grading Worksheet A - Annotation #14 - (Multimodal Management)* in the original guideline document].

Evidence supporting this recommendation is of classes: A, C, M

15. **Education of Key Individuals**

Upon initial diagnosis of ADHD, education of key individuals including the parents, the child, and school personnel is imperative.

For the parents, this should include information on neurologic mechanisms, common features of ADHD and how they relate to the child's previous and current problems, and future expectations of clinical course and intervention strategies. The importance of individual teacher selection each year should be emphasized.

For the child, a developmentally appropriate explanation and demystification of ADHD using specific metaphors and examples is especially helpful. This should include not only explanation of related difficulties, but also discussion of the child's strengths and attributes.

For school personnel in contact with the child, one should not assume teacher knowledge of ADHD. It is important to provide specific teacher-focused information for the parents to share with all appropriate individuals. This information not only should explain ADHD related to the child's classroom difficulties, but also should address appropriate intervention strategies and modifications as described in Annotation # 18, "School Interventions"

16. **Parents/Family Focused Strategies**

Key Points:

- Parents have a unique role in ADHD management as they see their children in all areas of life, and have the long-term goal of seeing their children become successful, well-adjusted members of society.
- Parents learn management skills through ADHD support groups, advocacy groups, and parenting skills training.
- Parents find specific intervention strategies to be helpful.

ADHD Support Groups

These groups help parents learn more about ADHD through lectures or reading material and can help parents cope emotionally by communicating with other parents of ADHD children in a supportive setting. The Attention Deficit Disorder Association (ADDA) and Children and Adults with Attention Deficit Disorder (CHADD) are two such groups and have local chapters in many areas. A children's or community hospital in the area or the child's school or school district may also have a support group.

Advocacy Groups

Groups exist to help parents learn about what rights their children have in the educational setting and what special services are available for their needs. These groups can also aid in parent interactions with the school system and can give parents some direction in finding services for their children. One such group is Parent Advocacy for Children's Educational Rights (PACER). Additional resources are listed in the Support for Implementation/Health Education Resources section of the original guideline document.

Parenting Skills Training

One of the most useful strategies a parent can undertake to improve harmony in the home is to learn ways to modify the child's behavior in a manner consistent with school-focused behavior modification. This serves to give the child direction, goals and limits in hopes of improving compliance, behavior, self-esteem, etc. This training can be obtained through formal classes, books, or counseling.

Suggestions for Parents

- Note problem behaviors and make notations of frequency and severity to help make the problems more objective and to aid in monitoring improvements as behavioral changes are made.
- Try to spend 10 to 15 minutes daily focusing on this child alone to listen and let them know they are important.
- Set consistent schedules and routines with forewarning of any upcoming changes.
- One or two simple, clear instructions should be given at a time. The child should repeat the instructions back to ensure comprehension.

- Clear, concise rules should be provided for the behavior of all family members, with consistent follow-through of appropriate consequences and rewards.
- Decrease inappropriate behavior by allowing:
    - Natural consequences to the child's actions
    - Logical consequences linked to the offending behavior
    - Time-outs
- Create consistent sleep habits and a restful sleep environment
- Have a special quiet spot with few distracting influences for doing homework or working on projects.
- Allow the child choices within set limits so that the child has a sense of some control.
- Have the parent take a break or time-out from the child if he or she is becoming too frustrated or angry.
- Make sure the child knows his or her behavior is the issue or problem, not the child himself or herself.

Comorbidity Present

In cases with significant family dysfunction or other stresses (e.g., financial, health problems, chemical dependency issues) individualized family therapy may be more appropriate. In-home counseling may be available through county services.

Evidence supporting this recommendation is of classes: A, R

17. **Child Interventions**

Key Points:

- Consider the need for social skills training to improve peer relationships that are often negatively affected by ADHD symptoms (i.e., impulsivity).
- Cognitive-behavioral therapy may be warranted to teach children how to be more reflective in problem solving.
- Study skills and organizational skills are additional areas to target.

To date, no well-designed studies have been empirically validated to support the use of social skills training, problem–solving training, or study/organizational skills training in the direct treatment of ADHD. Anecdotal endorsement of these interventions does exist. Using the same criteria for acceptance of psychosocial treatments for ADHD and those used for acceptance of medication treatments for ADHD is difficult, given the methodological limits and complexities of psychosocial research. Thus, the following interventions may be understood and most appropriate for implementation with individuals with ADHD when problems with social skills, problem solving, or organization co-occur with or develop secondarily to ADHD symptoms.

The purpose of education of the child is to provide the basis for further independence. The person with ADHD will be managing their own environment and interpersonal relationships and choosing a vocation. Without

insight and specific strategies to address this impairment, long-term consequences may include decreased self-esteem and poor problem solving. Loss of social support from peers has long-lasting consequences. Early intervention can avert the resulting loss of self-esteem and productivity.

Social Skills Training

The child's social skills are resources for solving the specific problems that arise from ADHD. Interpersonal problems and difficulties with peers may occur secondary to impulsivity (i.e., unpredictable behavior). As a child gets older, unpredictable behavior is less tolerated by peers and within the family.

Social skills building is meant to offer immediate practical skills in a safe setting. Sometimes this can be a way to have several people (family, school, friends) offering the same message about appropriate behavior and may have a better chance of being generalized to a larger setting.

Social skills training (group or individual) instructs children in the execution of specific prosocial behaviors. It is appropriate for children who exhibit difficulties in initiating and maintaining positive peer interactions. Children with ADHD often show deficient use of functional, pragmatic language in social situations. This type of training is designed to increase knowledge about appropriate and inappropriate social behaviors. The various target skills may include maintaining eye contact, initiating and maintaining conversation, sharing, and cooperating. Role-playing exercises with group feedback are commonly used.

Social skills building groups may be available through the school. These may be recognized as "friendship groups" or "social skills groups." Early childhood family education, which may include children older than the preschool aged child, is also available. Some other community resources may include the YMCA, Community Education, or local health organizations.

Evidence supporting this recommendation is of classes: A, D, R

Problem Solving Strategies/Cognitive Behavioral Therapy

The goal of self-instructional problem solving training is to help children who have ADHD "stop and think" before acting. This therapeutic modality falls under the general category of cognitive-behavioral therapies. Designed to facilitate self-control and reflective problem solving, it is appropriate for children who exhibit impulsive, non-self-controlled behavior and/or manifest deficits in problem solving. This can be accomplished through the use of various resources: family therapy, in-home therapy, an individual therapist, or county services (if available). All options should be coordinated with school efforts.

Evidence supporting this recommendation is of classes: A, R

Study/Organizational Skills Training

Study and organizational skills building should be offered in conjunction with curriculum intervention. The curriculum should be concrete and sequential with only essential information as a requirement. Specific interventions can address issues, such as:

Behavior: Difficulty sequencing and completing steps to accomplish specific tasks (e.g., writing a book report or term paper, organizing paragraphs; solving division problems)

Accommodation: Break task into workable and manageable component tasks. Provide examples to accomplish task.

Behavior: Difficulty prioritizing from most to least important.

Accommodation: Prioritize assignments and activities. Provide a model to help students. Post the model and refer to it often.

Evidence supporting this recommendation is of class: R

Comorbidity Present

In children or adolescents with comorbid anxiety, depression/dysthymia, chemical abuse, oppositional or conduct disorder, medical comorbidity appropriate medical management should be implemented.

18. **School Interventions**

Key Points:

- Primary care providers for children with ADHD should explore with school personnel and parents opportunities for services and supports for the child which are available within their school.
- Physicians and other primary health care providers are often in a good position to assist parents in advocating for appropriate school programming for children with ADHD.
- If the primary care provider or parents decide not to use medications to treat ADHD, despite its overwhelming effectiveness, it is still appropriate to implement the psychosocial interventions.

Even at optimal doses of medication, most children with ADHD have residual difficulties at school. Physicians and other primary health care providers are often in a good position to assist parents in advocating for appropriate school programming for children with ADHD. Several classroom strategies are listed below. Although it is not expected that the primary care provider will act as an expert "consultant" in this area, it is important for him or her to have enough background familiarity with these issues to be an effective advocate and to be able to educate and empower parents on these issues.

Studies demonstrate that medication is superior to non-pharmacological interventions when delivered alone. Non-pharmacological interventions such as behavioral management and educational accommodations/modifications in

the classroom have been found to assist children with ADHD in coping with and compensating for the academic and social difficulties associated with this disability. If the primary care provider or parents decide not to use medications to treat ADHD, despite its overwhelming effectiveness, it is still appropriate to implement the psychosocial intervention.

Classroom Strategies for Children with ADHD

- A high degree of order and predictability to the classroom
- Clear and consistent rules and expectations
- Classroom organizational strategies such as a posted daily work schedule, written notices for homework assignments, quiet work areas, seating close to teacher and near positive peer models
- Training for students in study skills and time management
- Regularly scheduled, frequent breaks
- Creation of multisensory learning activities that are engaging and use various attention-getting devices
- Reduction of the amount of work assigned or other modifications of assignments
- Liberal use of positive reinforcers immediately and continually for desired behaviors
- Establishment of a school-home daily note card system to maintain parent-teacher contact with regard to academic and behavioral progress and problem areas
- Working with the student on self-monitoring, self-reinforcement and development of compensatory/adaptive strategies

Ongoing collaboration and communication between teachers and primary care providers is desirable in order to discuss and implement effective treatment strategies for each child. It is also important for the primary care provider to communicate with school staff about their perceptions of the child's diagnosis (or diagnoses) with particular attention to any medical/neurologic problems (e.g., Tourette's Syndrome, mental retardation, seizures, hearing impairment, chronic medical conditions) that might be important for the teachers to understand. They may also want to discuss the perceived role of psychotropic medication and answer any questions about expected benefits, side effects, etc.

The severity of the child's ADHD and its adverse impact on academic performance will determine whether the child qualifies for special education services. The three educational service categories most commonly identified for children with ADHD (in school terminology) are Learning Disability (LD), Emotional/Behavioral Disorder (EBD), and Other Health Disability (OHD). Students with ADHD who do not meet eligibility criteria for the specific programs described (LD, EBD, OHI) may still need some level of assistance to be successful and may still receive specialized instruction and accommodations in the regular classroom. This is stated in section 504 of the Rehabilitation Act of 1973 and is intended to insure a "free and appropriate education in the least restrictive environment" for all students including those with a physical or mental impairment that limits learning. **In these cases, parents should be encouraged to formally request a "Section 504 plan" for their child from school administration. Adequate**

documentation of the child's impairment (e.g., ADHD or other diagnosis) will be required from the physician.

Comorbidity Present

Specific learning disabilities comorbid to ADHD must be treated concurrently with appropriate special educational programming. Primary care providers should develop a basic understanding of the Individualized Educational Plan (IEP), the document which details the student's direct and indirect special educational services.

Speech- and language-related difficulties must also be treated and supported across the curriculum and can have an impact on a number of subject areas and tasks. Children with ADHD who are also hearing impaired may require special assistance such as an "auditory trainer" device and other classroom accommodations. Most districts have the availability of a hearing impairment specialist to consult on these clients.

Evidence supporting this recommendation is of classes: A, R

19. **Medications Warranted and Desired?**

Medication is an effective treatment for ADHD. Medication is superior to non-pharmacological interventions when delivered alone. The decision to use medication should be made in conjunction with parents following a thorough discussion of expected benefits and potential risks. Factors such as the child's age, severity of symptoms, and presence of comorbidity should also be considered and may involve decision making regarding choice of medication.

Evidence supporting this recommendation is of classes: A, M, R

20. **First Line Medication(s) Trial(s)**

Key Points:

- Psychostimulant medications are considered first-line therapy in children with ADHD: the four types of psychostimulant medications are methylphenidate, dex-methylphenidate, dextroamphetamine and amphetamine salts.
- Absolute contraindications to the use of psychostimulants include psychosis, certain cardiovascular conditions, or previous untoward reactions to psychostimulant medications.
- Treatment with psychostimulants is often safe and effective in managing children with ADHD with mild to moderate tics.
- Response to one psychostimulant does not predict response to the others.
- Atomoxetine, a norepinephrine reuptake inhibitor, has been found effective in the treatment of ADHD and may also be considered a first-line agent.

Psychostimulant medications are considered first-line therapy as they are effective in 70–80% of children with ADHD. It is theorized that stimulants increase the availability of neurotransmitters at the presynaptic terminals. This allows the child to exhibit more purposeful, goal-oriented behavior by focusing attention, lessening impulsiveness, and decreasing motor activity.

Absolute contraindications to the use of psychostimulants include psychosis, certain cardiovascular conditions, or previous untoward reactions to stimulant medication. Occasionally a comorbid condition may warrant the consideration of alternative medications. In the presence of comorbidity, the primary symptoms of concern should influence the medication decision.

Treatment with psychostimulants is often safe and effective in managing many children with ADHD with mild to moderate tics. Nevertheless, frequency and severity of tics should be carefully monitored in these patients. No routine blood work is necessary before or during psychostimulant therapy.

The four types of stimulant medication most commonly used are:

- Methylphenidate (MPH)
- Dex-methylphenidate
- Dextroamphetamine
- Amphetamine salts

Response to one stimulant does not predict response to the others. Studies indicate a 70 to 80% response rate to each stimulant independent of one another; therefore, if a child is a non-responder to one stimulant, it is advisable to attempt a second or third trial with other stimulants.

Each of these stimulant medications has the common adverse effects of decreased appetite, insomnia, headache, stomachaches, and irritability. If sleep problems are reported, determine factors that may influence response to stimulant treatment.

Dosages should be adjusted for each child depending on body weight, degree of impairment, and specific symptoms targeted for improvement. Children with ADHD of the predominantly inattentive type have been shown to respond well to low doses of methylphenidate. Children with ADHD, combined-type or predominantly hyperactive, have shown more positive response at moderate to high doses of methylphenidate.

Refer to Table 3 in the original guideline document for information on dosing, titration, and adverse effects of first line ADHD medications.

Atomoxetine (Strattera), an inhibitor of the presynaptic norepinephrine transporter, has been found effective in the treatment of ADHD. It now may be considered as a first-line agent in patients for whom psychostimulants may not be an option, for patients with comorbid anxiety, sleep initiation disorder, substance abuse, or tics, or if initially preferred by parents and/or physician. Atomoxetine is a non-controlled substance that may make it preferable in

certain clinical situations. Potential adverse effects include somnolence, nausea, anorexia, mild increase in blood pressure or heart rate and skin rash.

In 2004 the Food and Drug Administration (FDA) issued a paper advising health professionals about a new warning regarding Strattera. The labeling has been updated with a bolded warning about the potential for severe liver injury following two reports. The warning indicates that the medication should be discontinued in patients who develop jaundice or laboratory evidence of liver injury. Currently, routine liver function tests are not being recommended for those taking this medication.

In September 2005, the FDA issued an alert advising health professionals about an increased risk of suicidal thinking in children and adolescents being treated with Strattera. The labeling has been updated with a boxed warning.

In February 2006, the FDA ordered labeling changes of all stimulants to include the following: "Sudden death has been reported in association with central nervous system (CNS) stimulant treatment at usual doses in children and adolescents with structural cardiac abnormalities or other serious heart problems." In general, stimulants should not be used in such patients. A careful history and physical examination is recommended before prescribing the medication. Particular attention to family history of sudden death prior to age 50, and individual history of unexplained syncope or chest pain are suggested. If potential risk is identified, further cardiology evaluation is recommended. In the absence of risk, there is no recommendation for further evaluation, including electrocardiogram (EKG) or cardiac ECHO.

Pharmacological treatment should be initiated by means of a trial that should incorporate teacher and parent rating scales of performance. Refer to Appendix A in the original guideline document for information on open label and placebo-controlled trials.

Evidence supporting this recommendation is of classes: A, C, D, R

22. **Alternative Medication(s) Trial(s)?**

When adequate stimulant and atomoxetine trial are unsuccessful due to either poor response or side effects in spite of adjustment, or if associated comorbidity, alternative medication trials may be considered. Second line medications for ADHD therapy in these situations commonly include tricyclic antidepressants (imipramine, desipramine), alpha adrenergic agonist (clonidine), and a nontricyclic antidepressant (bupropion).

At this point, due to increased side effects and more intense monitoring, the primary clinician is directed out of guideline and may consider subspecialty consultation depending upon individual knowledge and expertise.

Evidence supporting this recommendation is of classes: A, C, D, R

For information on second-line ADHD medications refer to Table 4 in the original guideline document.

24. **Maintenance and Continuing Care**

Key Points:

- ADHD has an impact in all domains of a child's life. The child usually does not outgrow ADHD but instead learns to cope and compensate for this chronic condition. All measures are aimed at building successes for the child in day-to-day life.
- Evaluation and management visits of these patients should take into consideration medical, psychosocial, and educational aspects.
- Anticipatory guidance is given at each visit; this can touch on points such as immediate and long-term expectations, study and organizational skills, guidance on behavior management or updating reading material. Advocacy issues are stressed and revising multimodal care management is often needed.
- The transition to adulthood is the last step in the child's journey. Consideration of these points is often helpful during that time.

Attention Deficit Hyperactivity Disorder may have an evolving impact on a child's or adolescent's learning or behavioral success. It is a condition that is significantly related to each child's environment (home, school, etc.) as well as to the specific demands placed upon the child or adolescent. The ability of the individual to develop compensation skills and success over time is related to these factors, as well as the presence or absence of comorbid conditions.

Recent evidence suggests that worsening clinical status during adolescence may more likely be due to environmental and/or comorbid causes, instead of inadequate psychostimulant medication dosage. The clinician should evaluate these possibilities before prescribing higher doses of stimulants to adolescents. For these reasons, close monitoring and follow-up is recommended for all children and adolescents diagnosed with ADHD, whether or not medication is utilized.

Frequency

- Closely by phone during trial and first several weeks
- Clinic visit after trial to review care plan
- Once patient is stable, clinic visits every 3 to 6 months depending on individual case; more frequent with significant comorbidity

These visits allow for review and management of the following areas:

Psychosocial

- Family functioning
- Home behavior management
- Peer relationships
- Outside activities

Educational

- ADHD symptoms
- Child-teacher relationships, social functioning, general attitude
- Academic performance, homework and study skills
- Current interventions and supports
- Review Individualized Educational Plan (IEP) or section 504 plan if appropriate

Psychological

- Perception of ADHD and treatment
- Self esteem issues
- Personal strengths and successes

Anticipatory Guidance

- Immediate and long-term expectations
- Study/organizational skills
- Behavior management
- Updated reading materials and advocacy issues

Transitioning to Adulthood

- Identify adult health care provider for care transfer (this may require coordination with college health service).
- Prioritize treatment to address target symptoms, level of impairment, and available resources (multiple modalities frequently useful), patient participation necessary.
- Emphasize vocational evaluation, counseling, and training as well as time management skills, organization, and study skills.
- Discuss relationship issues.
- High index of suspicion for comorbidity
- Address risk of medication abuse by patient and peers.
- Stimulants may be less effective; consider alternative medications if indicated.

Medical

- Measurement
    - Height, weight, blood pressure, pulse
- Medication
    - Dosage, timing, coverage priorities, duration
    - Before making dosage adjustments or switching medications, the patient's adherence to current regimen should be addressed.
- Positive attributes of medication
- Side effects and their management (see Table 6 in the original guideline document)
- Laboratory as indicated
- Behavior rating scales (especially if problems and anticipated medication adjustment)
- Alternative/complimentary medicine

Increasingly, parents are considering the use of alternative/complimentary therapies for children with ADHD. Certain therapeutic interventions, such as the use of herbal, botanical, and other nutraceutical agents, have the capacity to interact with psychotropic medications including stimulants, selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs), among others. Therefore, it is important for pediatric health care providers to inquire in a non-judgmental fashion about the use of these agents by children under their care. Parents can then be educated appropriately about potential risks, benefits, side effects, and drug interaction possibilities associated with a certain therapy. Such interventions are not supported by evidence-based research at this time.

Revise multimodal care management plan as needed.

Evidence supporting this recommendation is of class: R

Adherence to current regimen may be assessed by asking open-ended non-threatening questions at each office visit. If adherence to medication regimen appears to be lacking, the patient may benefit from adherence interventions. Such interventions include re-educating the patient and family about medications and how they fit into the treatment plan (including side effects and how they may be prevented.) Other ways to help adherence include regimen simplification (e.g., less frequent dosing), use of patient adherence aids (e.g., tablet boxes, alarms), suggesting support group sessions, sending appointment reminders, cueing medication administration to daily activities (e.g., breakfast) and giving positive reinforcement for adherence efforts. Adverse effects of stimulants are not uncommon, but can generally be managed in most cases. The more common side effects include anorexia, insomnia, stomachaches, and headaches and, less commonly, rebound irritability, dysphoria, agitation, tics, and growth impairment are seen.

It is generally felt that, in individual patients, psychostimulants may unmask or exacerbate tics. However, in two recent studies evidence suggests that psychostimulants may not be associated with tic frequency or severity.

Growth suppression has been a concern with long-term use of stimulants. It seems to occur rarely and is likely secondary to reduced caloric intake. Upon discontinuing the stimulant, growth rebound occurs with no significant compromise of ultimate height attained.

ADHD is a lifelong chronic condition. While it is common for the hyperactivity part of the condition to ameliorate throughout adolescence, there often remains (in 50 to 60% of patients) significant inattentiveness, restlessness, and impulsivity.

As expected, patients will be able to discontinue medication variably, depending on the severity of ADHD symptoms and their ability to compensate relative to environmental demands. (e.g., school, work, family).

Poor prognostic indicators have included low intelligence, poor academic achievement, early conduct problems, poor social relationships, and family psychopathology. Many individuals, however, learn to compensate well as they rely on their significant strengths to overcome any persisting ADHD symptoms.

Evidence supporting this recommendation is of classes: A, C, D, M, R

Definitions:

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Nonrandomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

Detailed and annotated clinical algorithms are provided for:

- Evaluation of Attention Deficit Hyperactivity Disorder
- Management of Attention Deficit Hyperactivity Disorder

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

In addition, key conclusions contained in the Work Group's algorithm are supported by a grading worksheet that summarizes the important studies pertaining to the conclusion. The type and quality of the evidence supporting these key recommendations (i.e., choice among alternative therapeutic approaches) is graded for each study.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

General Benefits

Accurate diagnosis and effective management of patients presenting with learning or behavior problems and suspected of attention deficit hyperactivity disorder (ADHD) in the primary care setting

POTENTIAL HARMS

- The most common side effects of stimulant medication include anorexia, insomnia, headache, stomach ache, increased heart rate; less commonly rebound irritability, dysphoria, agitation, tics, and growth impairment are seen. Growth suppression occurs only rarely, and is likely secondary to reduced calorie intake.
- In addition, it is generally felt that, in individual patients, psychostimulants may unmask or exacerbate tics. However, evidence from two recent studies suggests that psychostimulants may not be associated with tic frequency or severity.
- In February 2006, the FDA ordered labeling changes of all stimulants to include the following: "Sudden death has been reported in association with central nervous system (CNS) stimulant treatment at usual doses in children and adolescents with structural cardiac abnormalities or other serious heart problems." In general, stimulants should not be used in such patients.
- Second line medications used in the treatment of attention deficit hyperactivity disorder (ADHD), such as tricyclic antidepressants (imipramine, desipramine), alpha adrenergic agonists (clonidine, guanfacine) and nontricyclic antidepressant (bupropion) have the following possible predominant adverse effects:
    - *Tricyclic antidepressants*: Cardiac conduction disturbances, dry mouth, urinary retention, and headache. Cases of sudden death have been reported with desipramine, but a cause and effect relationship has not been established. It is prudent to exercise a heightened level of caution when instituting and monitoring desipramine therapy.
    - *Alpha adrenergic agonists*: Sedation, rashes with skin patches, orthostatic hypotension in less than 5% of those treated, fatigue, headache, and insomnia
    - *Nontricyclic antidepressant (bupropion)*: Sedation, constipation, dryness of mouth, may lower seizure threshold
- Potential adverse effects of atomoxetine (Strattera) include somnolence, nausea, vomiting, gastrointestinal pain, anorexia, dizziness, mild increase in blood pressure or heart rate, and skin rash. In 2004 the U.S. Food and Drug Administration (FDA) issued a paper advising health professionals about a new warning regarding Strattera. The labeling has been updated with a bolded warning about the potential for severe liver injury following two reports. The warning indicates that the medication should be discontinued in patients who developed jaundice or laboratory evidence of liver injury. Currently, routine liver function tests are not being recommended for those taking this medication.

In September 2005, the FDA issued an alert advising health professionals about an increased risk of suicidal thinking in children and adolescents being treated with Strattera. The labeling has been updated with a boxed warning.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Absolute contraindications to the use of psychostimulants include psychosis, certain cardiovascular conditions, or previous untoward reactions to stimulant medication.
- Atomoxetine should not be used concurrently or within two weeks of monoamine oxidase (MAO) inhibitors as it may significantly increase atomoxetine concentrations, requiring atomoxetine dose reduction.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. An action group is formed when a topic is selected as an initiative. In addition to the action group goals and measures, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s).Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

Detailed measurement strategies are presented in the original guideline document to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

Key Implementation Recommendations

The following system changes were identified by the guideline work group as key strategies for health care systems to incorporate in support of the implementation of this guideline.

1. Evaluation for key features of attention deficit hyperactivity disorder (ADHD) using the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/ Diagnostic and Statistical Manual for Primary Care (DSM-IV/DSM-PC) criteria should include information from multiple sources such as parents/caregivers, the child and school personnel and should be documented in the patient medical record.
2. Results of this evaluation (#1) are used to identify treatment options/resources.
3. Develop processes that allow for consistent documentation and monitoring of diagnosis and management of ADHD.
4. Develop a process for follow-up assessment and success in management of ADHD for primary care provider, parents and school.
5. Develop a process for consistent documentation and monitoring of medication.
6. Develop a process to key the primary care physician at the time of or near puberty, that anticipatory guidance and transition into adulthood discussion should take place.

IMPLEMENTATION TOOLS

Clinical Algorithm
Patient Resources
Pocket Guide/Reference Cards
Quality Measures

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

RELATED NQMC MEASURES

- Diagnosis and management of attention deficit hyperactivity disorder (ADHD) in primary care for school age children and adolescents: percentage of patients newly diagnosed with ADHD whose medical record contains documentation of DSM-IV or DSM-PC criteria being addressed.
- Diagnosis and management of attention deficit hyperactivity disorder (ADHD) in primary care for school age children and adolescents: percentage of patients treated with medication for the diagnosis of ADHD whose medical record contains documentation of a follow-up visit twice a year.
- Diagnosis and management of attention deficit hyperactivity disorder (ADHD) in primary care for school age children and adolescents: percentage of patients diagnosed with ADHD whose medical record contains documentation that the clinician discussed the need for school-based supports and educational service options for children with ADHD.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Diagnosis and management of attention deficit hyperactivity disorder in primary care for school-age children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007 Mar. 68 p. [135 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1997 Oct (revised 2007 Mar)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals

and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

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GUIDELINE COMMITTEE

Committee on Evidence-Based Practice

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, the Institute for Clinical Systems Improvement (ICSI) has adopted a policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on guideline content. Readers of the guideline may assume that only work group members listed below have potential conflicts of interest to disclose.

Judson Reaney, MD received consulting, speaker fees or honoraria from UCB Pharma, Shire, McNeil, Eli Lilly and Novartis.

No other work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2005 Jan. 69 p.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents. Executive summary. Bloomington (MN): Institute for Clinical Systems Improvement, 2007 Mar. 2 p. Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.
- ICSI pocket guidelines. April 2006 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2006. 298 p.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

The following is available:

- Diagnosis and management of attention deficit hyperactivity disorder in primary care for school age children and adolescents. Health care guideline for patients and families. Bloomington (MN): Institute for Clinical Systems Improvement, 2007 Mar.

Electronic copies: Available in Portable Document Format from the Institute for Clinical Systems Improvement (ICSI) Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information

has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

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